BANG & OLUFSEN A/S
DK – 7600 STRUER
DENMARK

TELEPHONE 07 – 85 11 22* TELEX 66529
CABLE ADRESS: BANGOLUF

3538426

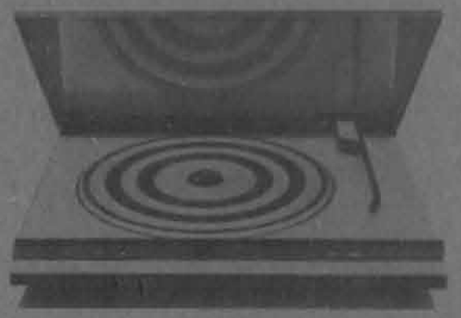
PRINTED IN DENMARK 10 - 78

Bang&Olufsen

BEOGRAM 1700 TYPE 5731
5733

BEOGRAM 2202 TYPE 5741

BEOGRAM 2402 TYPE 5742



Beogram 2200
Type 5721, 5723

Beogram 2400
Type 5722

Beogram 3400
Type 5726

Beogram 3404
Type 5727, 5747

SERVICE MANUAL

INTRODUCTION

Beogram models 2200, 2400, 3400 and 3404 are developments of previous record players with radial tone arm, Beogram models 1102, 1902 and 2400. Automatic speed switching and automatic pickup arm cueing have been introduced.
In addition, Beogram models 2400 and 3404 have provision for remote control of certain functions via a Beomaster 2400.

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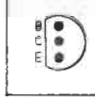
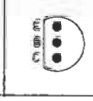
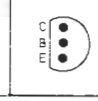
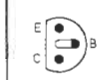
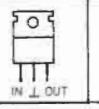
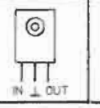
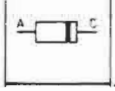
Transistor and IC List

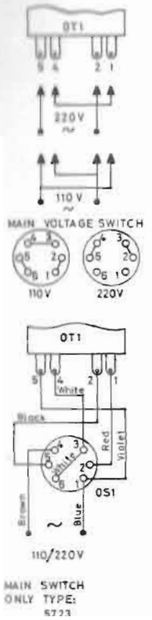
17	18	19	20	105	106	109	
							

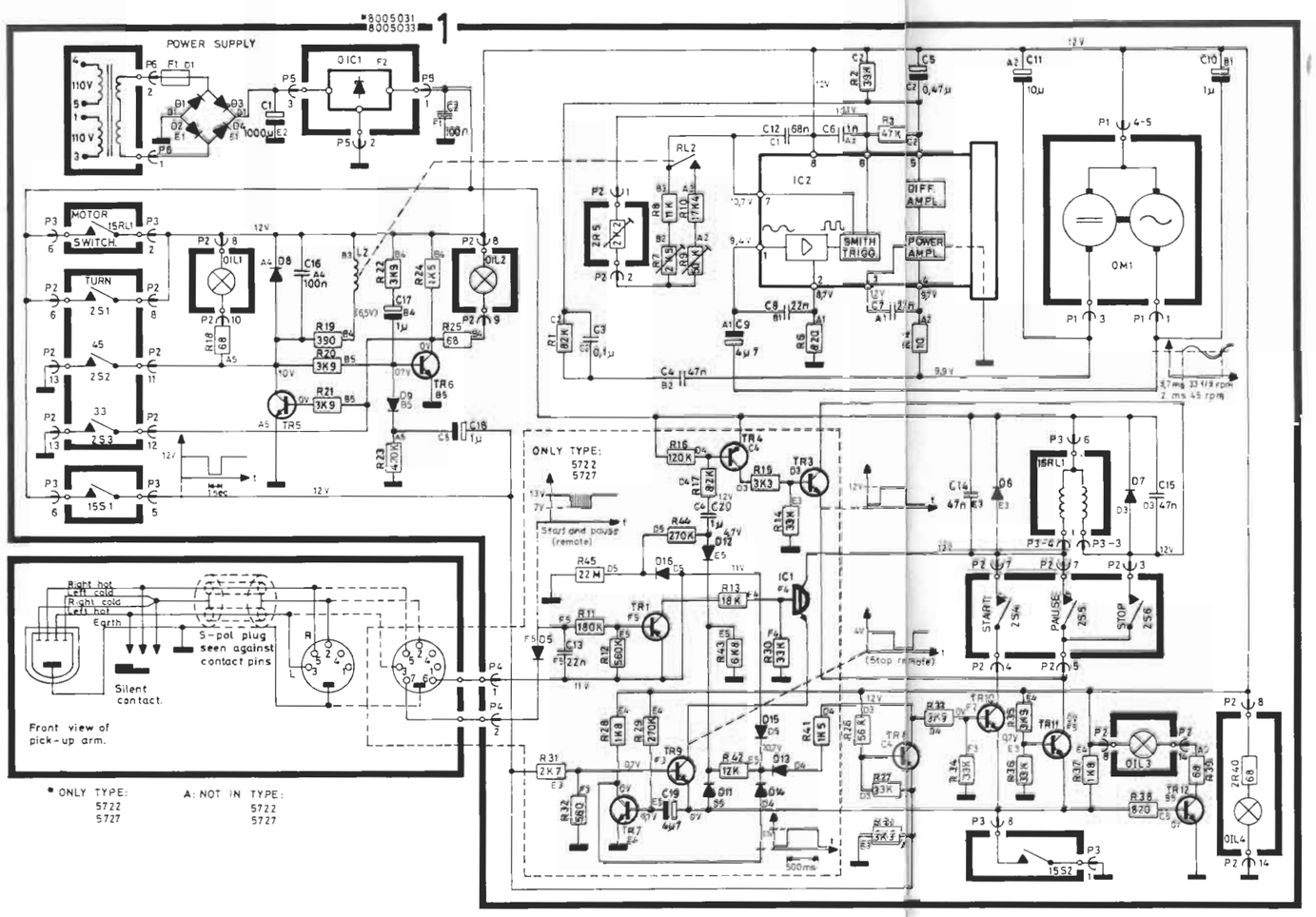
0IC1	8340049	**105**	LM 340T-12
		105	µA 7812CU
		105	µA 781ZCU
		106	MC 7812
1TR1	8320152	**20**	BC 557B
		20	BC 212B/BK
		17	BC 212BL
		18	BC 307B
		20	BC 251B
1TR3	8320295	**20**	BC 337-25/18
1TR4	8320152	**20**	BC 557B
		20	BC 212B/BK
		17	BC 212BL
		18	BC 307B
		20	BC 251B
1TR5	8320097	**20**	BC 547B
1TR6		**20**	BC 182B/BK
1TR7		**17**	BC 182BL
		20	BC 171
		20	BC 237B
1TR8	8320152	**20**	BC 557B
		20	BC 212B/BK
		17	BC 212BL
		18	BC 307B
		20	BC 251B
1TR9	8320295	**20**	BC 337-25/18
1TR10			
1TR11			
1TR12	8320097	**20**	BC 547B
		20	BC 182B/BK
		17	BC 182BL
		20	BC 171
		20	BC 237B
1IC1	8340028	**19**	MPS A13
		19	SPS 5418
		19	TPS A13
1IC2	8340108	**109**	MHN-3P2-RDS

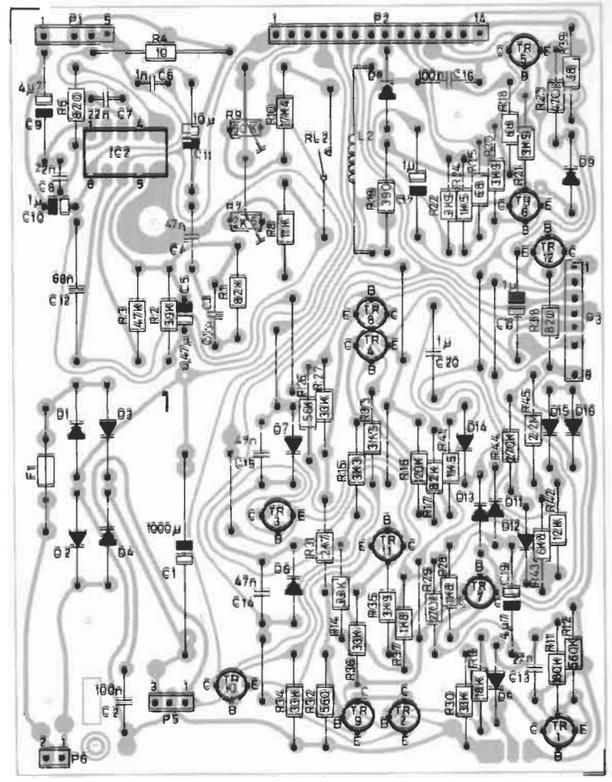
Diode list

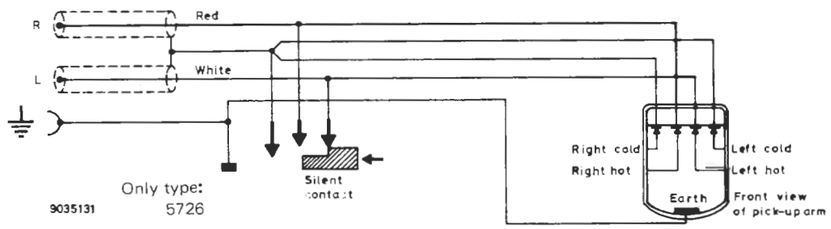
209	215	217					
							

1D1-4	8300023	**209**	1N 4002/RL
		209	1N 4003
1D6-16	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148


OT1
220V
110 V
MAIN VOLTAGE SWITCH
110V
220V
OT1
White
Red
Violet
Blue
Brown
OS1
110/220V
MAIN SWITCH
ONLY TYPE:
5722


*8005031
8005033
1
POWER SUPPLY
MOTOR SWITCH
TURN
45
33
15RL1
15S1
2S1
2S2
2S3
OIL1
OIL2
IC1
IC2
DIFF. AMPL.
SMITH TRIGG.
POWER AMPL.
OM1
RL2
ONLY TYPE:
5722
5727
Start and pause (remote)
(Stop remote)
15RL1
START
PAUSE
STOP
2S4
2S5
2S6
Right hot
Left cold
Right cold
Left hot
Earth
Silent contact.
S-pol plug seen against contact pins
Front view of pick-up arm.
* ONLY TYPE: 5722 5727
A: NOT IN TYPE: 5722 5727




R
L
Red
White
Only type:
5726
9035131
Silent contact
Right cold
Right hot
Earth
Left cold
Left hot
Front view of pick-up arm

Turn
45
33
IL1
IL2
IL4
Stop
Pause
Start
IL3
v
gr/wh
r
v/wh
bl/wh
b
br
grey
bl
y
gr
wh
or
grey

ELECTRICAL PARTS LIST

Beogram 2200 and 3400, type 5721, 5723 and 5726

PC1, Power supply and control unit, 8005033

0IL1	8230056	12 V - 30 mA	0IL3	8230056	12 V - 30 mA
0IL2	8230056	12 V - 30 mA	0IL4	8230056	12 V - 30 mA

R1	5010091	82 kohms ± 5% 1/8 W	R22	5010069	3.9 kohms ± 5% 1/8 W
R2	5010060	39 kohms ± 5% 1/8 W	R23	5010077	470 kohms ± 5% 1/8 W
R3	5010045	47 kohms ± 5% 1/8 W	R24	5010247	1.5 kohms ± 5% 1/8 W
R4	5100023	10 ohms ± 10% 1 W	R25	5010039	68 ohms ± 5% 1/8 W
R6	5010068	820 ohms ± 5% 1/8 W	R26	5010061	56 kohms ± 1/8 W
R7	5370173	2.7 ohms ± 20% 0.1 W	R27	5010075	33 kohms ± 5% 1/8 W
R8	5020114	11 kohms ± 1% 1/8 W	R31	5010076	3.3 kohms ± 5% 1/8 W
R9	5370061	50 kohms ± 20% 0.1 W	R33	5010069	3.9 kohms ± 1/8 W
R10	5020059	17.4 kohms ± 1% 1/8 W	R34	5010075	33 kohms ± 5% 1/8 W
R18	5010039	68 ohms ± 5% 1/8 W	R35	5010069	3.9 kohms ± 5% 1/8 W
R19	5011021	390 ohms ± 5% 1/4 W	R36	5010075	33 kohms ± 5% 1/8 W
R20	5010069	3.9 kohms ± 5% 1/8 W	R37	5010066	1.8 kohms ± 5% 1/8 W
R21	5010069	3.9 kohms ± 5% 1/8 W	R38	5010068	820 ohms ± 5% 1/8 W
			R39	5010039	68 ohms ± 5% 1/8 W

C1	4200388	1000µF 35 V	C10	4201057	1 µF 35 V
C2	4130150	100 nF ± 20% 100 V	C11	4200342	10µF 63 V
C3	4130150	100 nF ± 20% 100 V	C12	4130098	68 nF ± 2.5% 63 V
C4	4130087	47 nF ± 10% 250 V	C14	4230087	47 nF ± 10% 250 V
C5	4201058	0.47 µF 35 V	C15	4130087	47 nF ± 10% 250 V
C6	4010027	1 nF ± 10% 100 V	C16	4130150	100µF ± 20% 100 V
C7	4010060	22 nF −20 +100% 40 V	C17	4200380	1µF 63 V
C8	4010060	22 nF −20 +100% 40 V	C18	4200380	1µF 63 V
C9	4200322	4.7 µF 63 V			

L2	6810007	Coil for Reed-switch	RL2	7600040	Reed-switch
				7500013	Contact pin

P1	7220160	Plug 5/4 pol.	P5	7210187	Socket 3 pol.
P2	7220100	Plug 14 pol.	P6	7220134	Plug 2 pol.
P3	7220130	Plug 8/7 pol.			

F1	6600024	Fuse 500 mA-S/250 V IEC 127		7200038	Fuse holder

PC2, Control panel, 8005034

R5	5370213	2.0 kohms ± 20% 0.1 W	R40	5010039	68 ohms ± 5% 1/8 W

P2	6273832	Wire bundle and Socket, 14 pol.

Beogram 2400 and 3404, type 5722 and 5727

PC1, Power supply and control unit, 8005031

0IL1	8230056	12 V - 30 mA	0IL3	8230056	12 V - 30 mA
0IL2	8230056	12 V - 30 mA	0IL4	8230056	12 V - 30 mA

R1	5010091	82 kohms ± 5% 1/8 W	R24	5010247	1.5 kohms ± 5% 1/8 W
R2	5010060	39 kohms ± 5% 1/8 W	R25	5010039	68 ohms ± 5% 1/8 W
R3	5010045	47 kohms ± 5% 1/8 W	R26	5010061	56 kohms ± 1/8 W
R4	5100023	10 ohms ± 10% 1 W	R27	5010075	33 kohms ± 5% 1/8 W
R6	5010068	820 ohms ± 5% 1/8 W	R28	5010066	1.8 kohms 5% 1/8 W
R7	5370173	2.7 ohms ± 20% 0,1 W	R29	5010083	270 kohms 5% 1/8 W
R8	5020114	11 kohms ± 1% 1/8 W	R30	5010075	33 kohms 5% 1/8 W
R9	5370061	50 kohms ± 20% 0,1 W	R31	5010298	2.7 kohms 5% 1/8 W
R10	5020059	17.4 kohms ± 1% 1/8 W	R32	5010067	560 ohms 5% 1/8 W
R11	5010072	180 kohms 5% 1/8 W	R33	5010069	3.9 kohms ± 1/8 W
R12	5010071	560 kohms 5% 1/8 W	R34	5010075	33 kohms ± 5% 1/8 W
R13	5010135	18 kohms 5% 1/8 W	R35	5010069	3.9 kohms ± 5% 1/8 W
R14	5010075	33 kohms 5% 1/8 W	R36	5010075	33 kohms ± 5% 1/8 W
R15	5010076	3.3 kohms 5% 1/8 W	R37	5010066	1.8 kohms ± 5% 1/8 W
R16	5010047	120 kohms 5% 1/8 W	R38	5010068	820 ohms ± 5% 1/8 W
R17	5010091	82 kohms 5% 1/8 W	R39	5010039	68 ohms ± 5% 1/8 W
R18	5010039	68 ohms ± 5% 1/8 W	R41	5010247	1.5 kohms 5% 1/8 W
R19	5011021	390 ohms ± 5% 1/4 W	R42	5010046	12 kohms 5% 1/8 W
R20	5010069	3.9 kohms ± 5% 1/8 W	R43	5010052	6.8 kohms 5% 1/8 W
R21	5010069	3.9 kohms ± 5% 1/8 W	R44	5010083	270 kohms 5% 1/8 W
R22	5010069	3.9 kohms ± 5% 1/8 W	R45	5001085	22 MOhms 10% 1/2 W
R23	5010077	470 kohms ± 5% 1/8 W			

C1	4200388	1000µF 35 V	C12	4130098	68 nF ± 2.5% 63 V
C2	4130150	100 nF ± 20% 100 V	C13	4130089	22 nF 10% 250 V
C3	4130150	100 nF ± 20% 100 V	C14	4230087	47 nF ± 10% 250 V
C4	4130087	47 nF ± 10% 250 V	C15	4130087	47 nF ± 10% 250 V
C5	4201058	0.47 µF 35 V	C16	4130150	100µF ± 20% 100 V
C6	4010027	1 nF ± 10% 100 V	C17	4200380	1µF 63 V
C7	4010060	22 nF −20 +100% 40 V	C18	4200380	1µF 63 V
C8	4010060	22 nF −20 +100% 40 V	C19	4200322	4.7 µF 63 V
C9	4200322	4.7 µF 63 V	C20	4130155	1µF 10% 100 V
C10	4201057	1 µF 35 V			
C11	4200342	10µF 63 V			

L2	6810007	Coil for Reed-switch	RL2	7600040	Reed-switch
				7500013	Contact pin

P1	7220160	Plug 5/4 pol.	P5	7210187	Socket 3 pol.
P2	7220100	Plug 14 pol.	P6	7220134	Plug 2 pol.
P3	7220130	Plug 8/7 pol.			

F1	6600024	Fuse 500 mA-S/250 V IEC 127		7200038	Fuse holder

PC2, Control panel, 8005034

R5	5370213	2.0 kohms ± 20% 0.1 W	R40	5010039	68 ohms ± 5% 1/8 W

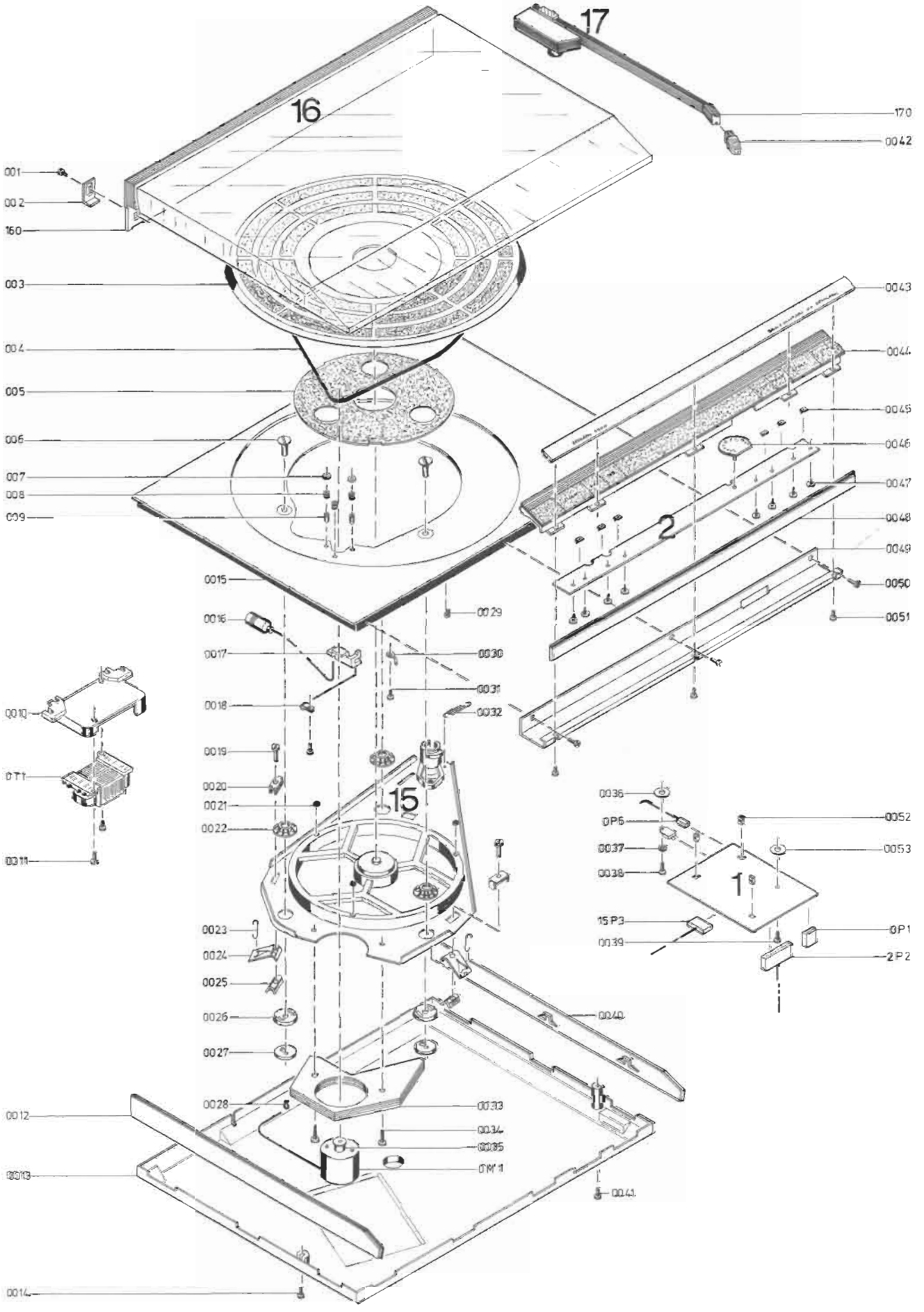
P2	6273832	Wire bundle and Socket, 14 pol.

Bang&Olufsen

MECHANICAL PARTS LIST
Beogram 2200, type 5721

001	2039010	Screw AM 3 × 6, DIN7985, black
002	2530312	Clamp
003	2726111	Turntable
004	2732037	Drive belt
005	2622264	Cover washer
006	2046910	Screw
007	2622271	Washer
008	2938137	Rubber bushing
009	2930074	Brass tube
0010	3172075	Insulating piece
0011	2043005	Screw AM 4 × 6, DIN7985 black
0012	3412961	Cabinet, 3 parts, teak
	3412963	Cabinet, 3 parts, rosewood
	3412964	Cabinet, 3 parts, oak
0013	3454172	Bottom
0014	2043005	Screw AM 4 × 6, DIN7985, black
0015	3458199	Top plate
0016	6270182	Wire with plug
0017	2515024	Lead holder
0018	2510067	Lead holder
0019	2042209	Screw AM 4 × 10, DIN84
0020	2640031	Clamp
0021	2620071	Felt washer
0022	2938129	Bushing
0023	2514028	Hook
0024	2815007	Leaf spring
0025	2640032	Clamp
0026	2938100	Bushing
0027	2622228	Washer
0028	3152118	Lead holder
0029	3152118	Lead holder
0030	7530005	Solder tag
0031	2039903	Screw AM 3 × 5, DIN7985
0032	2810090	Spring
0033	3342038	Counterweight
0034	2015010	Screw 3,5 × 16, DIN7981
0035	2722026	Pulley
	2070400	Threaded pin M2 × 3, DIN 553
0036	2622231	Mica sheet TO-126
0037	2938127	Insulating bushing TO-220
0038	2039903	Screw AM 3 × 5, DIN7985
0039	2013201	Screw 2.9 × 6.5, DIN7981
0040	3412961	Cabinet, 3 parts, teak
	3412963	Cabinet, 3 parts, rosewood
	3412964	Cabinet, 3 parts, oak
0041	2043005	Screw AM 4 × 6, DIN7985, black
0042	8954650	Pick-up MMC 20 E (replacement)
0043	2568505	Moulding
0044	2775623	Operating panel
0045	7500131	Contact spring
0046	2770187	Knob
0047	2015909	Screw 3.5 × 6.5
0048	3412961	Cabinet, 3 parts, teak
	3412963	Cabinet, 3 parts, rosewood
	3412964	Cabinet, 3 parts, oak
0049	2548152	Bracket
0050	2039010	Screw AM3 × 6, DIN7985, black
0051	2039901	Screw AM3 × 8, DIN7985, black
0052	3152063	Holder
0053	2622231	Mica sheet TO-126

160	3164318	Dust cover
170	2850084	Pickup arm
0M1	8400098	Motor with pulley and wire/socket
0P1	7210115	Socket/housing 5/4 contacts,
	7500114	Contactpin
2P2	6273832	Set of wires with socket, 14-contacts,
15P3	6273819	Set of wires with socket, 8/7-contacts,
0P6	6273816	Set of wires with socket, 2 contacts,
0T1	8013197	Mains transformer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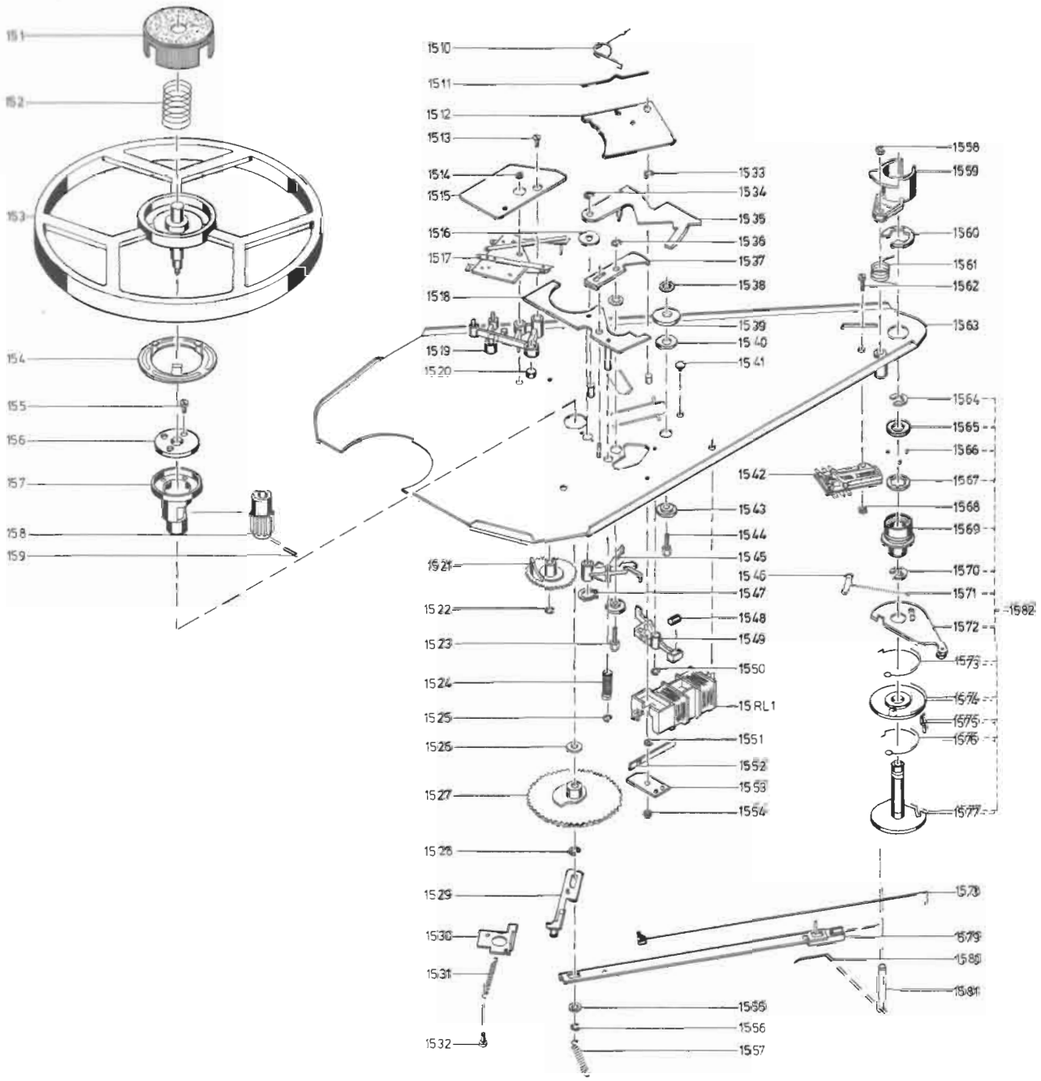
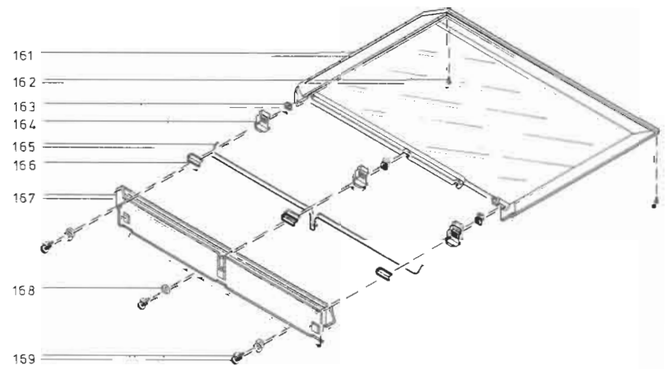


Parts list for Chassis 15

151	3014039	Adaptor	1542	7459018	Contact (silent)
152	2818059	Spring	1543	2803005	Washer
153	2794075	Flywheel	1544	2992048	Pin
154	3014040	Adaptor ring	1545	2853058	Arm
155	2038220	Screw AM 3 × 12, DIN84	1546	2816162	Slide
156	2905075	Bearing ring	1547	2390015	Circlip 5.5
157	3156037	Bearing bushing, complete	1548	3356035	Magnet
158	2700024	Gear-wheel	1549	2853059	Arm
159	2361048	Locking pin	1550	2390002	Locking ring 3.2
1510	2819145	Spring	1551	2390002	Locking ring 3.2
1511	2819141	Spring	1552	7530084	Contact
1512	3014041	Friction plate	1553	3162127	Cover
1513	2038005	Screw AM3 × 5, DIN963	1554	2380011	Nut M3
1514	2380011	Nut M3	1556	2390002	Locking ring 3.2
1515	3162126	Cover	1557	2810082	Spring
1516	2622285	Washer	1558	2390002	Locking ring 3.2
1517	7459017	Switch 15S1-2	1559	2623033	Housing
1518	3014042	Adaptor plate	1560	2938141	Locking ring
1519	3152270	Holder	1561	2812082	Spring
1520	3356034	Magnet	1562	2038218	Screw AM3 × 12, DIN84
1521	2700025	Gear-wheel	1563	3110023	Chassis
1522	2390002	Locking ring 3.2	1564	2390033	Locking ring 5
1523	2992076	Pin	1565	3152224	Washer
1524	2818060	Spring	1566	2917017	Ball ø2,5
1525	2390002	Locking ring 3.2	1567	2938152	Ring
1527	3017012	Cam-tuning wheel	1568	2380011	Nut M3
1528	2390002	Locking ring 3.2	1569	2938147	Bushing
1529	2542511	Bracket	1570	2390033	Locking ring 5
1530	2542512	Bracket	1571	2810095	Spring
1531	2818061	Bracket	1572	2851102	Arm
1532	2038078	Screw	1573	2810106	Spring
1533	2390002	Locking ring 3.2	1574	2750018	Washer
1534	2390002	Locking ring 3.2	1575	2994021	Pin
1535	3014031	Arm	1576	2819107	Spring
1536	2390001	Locking ring 2.3	1577	2938142	Pile
1537	3014043	Stop	1578	2850097	Arm
1538	2395030	Lock disc	1579	2852040	Arm
1539	2938084	Washer	1580	2530326	Arm
1540	2622108	Washer	1581	2850093	Bar
1541	3035020	Plastic foot	1582	2938153	Pickup bearing, complete

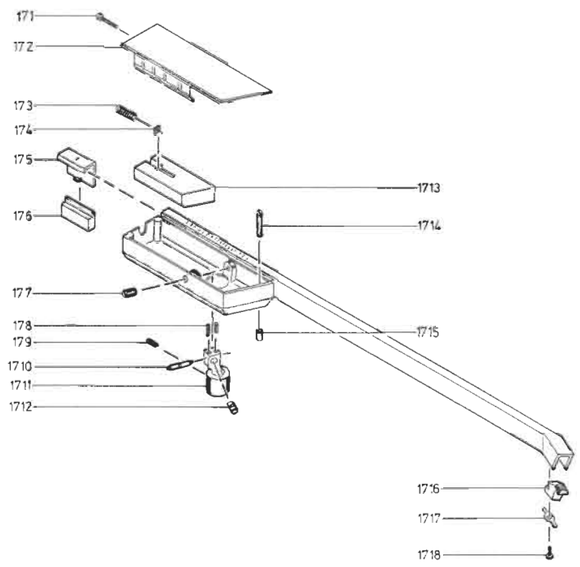
15RL1	8024042	Coil	
	7500135	Contact	

Parts list for dust cover 21 642 318, cover 31 642 318, pos. 160



161	3164305	Cover	166	2530328	Bracket
162	3014007	Stop	167	3452527	Back part
163	2380105	Square nut M4, black	168	2624034	Spring-washer
164	2578020	Holder	169	2042008	Screw AM4 × 10, DIN965, black
165	2819128	Spring			

Parts list for pickup arm 2550084, pos. 170



171	2034913	Screw AM2 × 16, DIN84
172	3162093	Cover
173	2812072	Spring
174	2380068	Square nut M2
175	3180064	Slide pointer
176	3342033	Counter weight
177	2905071	Pointed bearing
178	2070400	Threaded pin M2 × 3
179	2070036	Threaded pin M3 × 4, DIN914
1710	2834060	Shaft
1711	3152207	Holder
1712	3151137	Bushing
1713	3342034	Counter weight
1714	2072098	Screw
1715	2938096	Bushing
1716	7200037	Socket with wire
1717	2033007	Chassis AM1.6 × 6, DIN84, black

Parts not shown

6271101	Mains lead with euro-plug
3535064	Diagramme
3391525	Outer carton
3391526	Insert
3397320	Foam packing right
3397321	Foam packing left
3917035	Foam for arm 200 × 45 × 10 mm
3627006	Cleaning brush for pickup
3624024	Adjustment weights, 20 and 60 grams
2938100	Disc for adjustment screws, turntable hight

Beogram 2200, type 5723

	2576106	Spacer for mains-voltage switch
	7400022	Mains-voltage switch
	2038260	Screw AM 3 × 12, DIN84, black
	2038071	Nylonscrew AM3 × 12

Beogram 2400, type 5722

0016	6271118	Wire with plug
0043	2568506	Profile

Beogram 3400, type 5726

0016	6270166	Wire with plug
0042	8954660	Pick-up MMC 20 EN (replacement)
0043	2568510	Profile
	3131131	Screen for mains transformer
	6100012	Mains lead 2.5 m

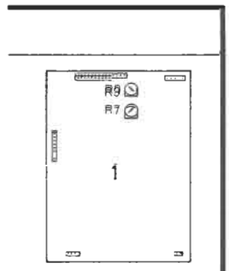
Beogram 3404, type 5727

0016	6271118	Wire with plug
0042	8954660	Pick-up MMC 20 EN (replacement)
0043	2568508	Profile
	3131131	Screen for mains transformer
	6100012	Mains lead 2.5 m

Other parts as Beogram 2200, type 5721.

ADJUSTMENTS

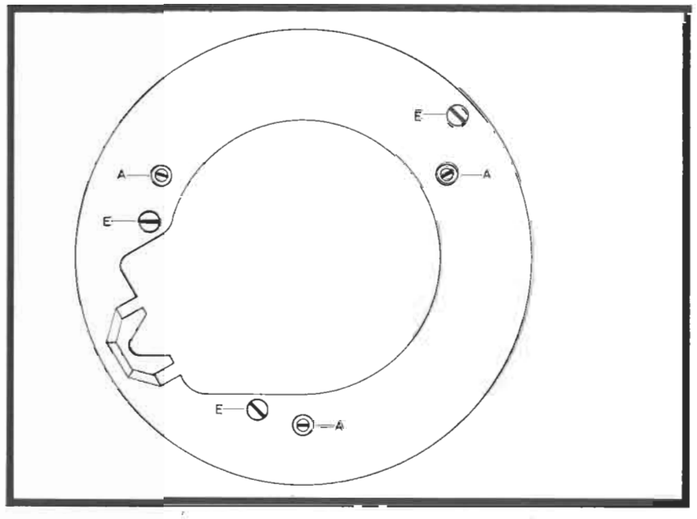
Speed



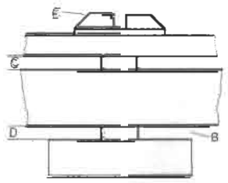
Adjust speed dial to 0.
33 r.p.m./min. should be adjusted first. Adjust with 1R7.
45 r.p.m./min. is adjusted with 1R9.
Speed may be checked in two ways:

1. Stroboscope disc and lamp connected to the mains. This check gives an inaccuracy of approx. 2% because the 50 Hz mains frequency deviates approx. ± 1Hz.
2. Stroboscope disc and stroboscobe lamp. This check gives an accuracy corresponding to the stroboscope lamp's tolerance which normally is superior to that of the mains frequency.

Turbtable height



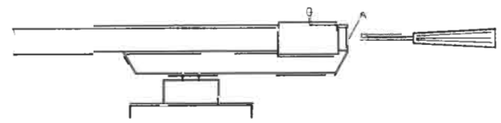
Remove covers from screws A.
Place turntable and two LP records of normal weight on the motor. The motor should then clear all three transit bushings E (see points B).
The turntable should likewise be parallel with the chssis deck, and when the two LP records are removed from the turntable, distances C and 0 should be approximately identical.
Adjustments are made wiht screws A.



Pickup height

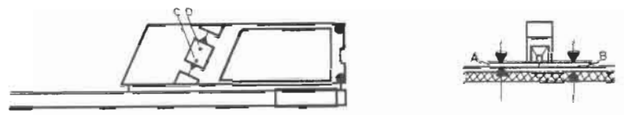
Put a record on the turntable.
Place the pickup arm above a run-off groove.
Adjust screw A until the distance from the stylus to the record is 5 mm.
Adjustment should be made wiht a counterbalance weight inserted.

Pickup arm balance



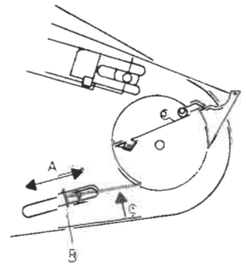
Set stylus pressure adjustment slider to 0 position.
Adjust screw A until the pickup arm is in exact balance.
Thereafter adjust stylus pressure to recommended value.

Pickup arm parallelism



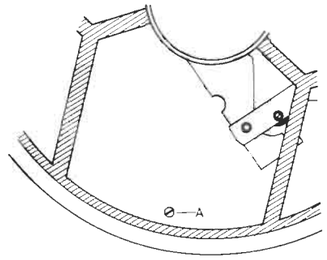
With screws A and D adjust until distances A and B are identical and the plane portion of the pickup is parallel with the top side of the record. Adjustment should be made wiht a counterbalance weight inserted.

Antiskating



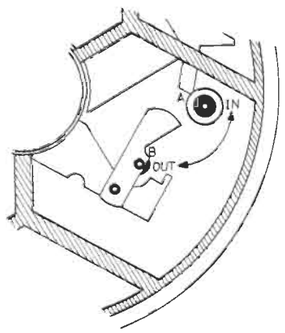
Put test record 3631045 on turntable.
Set stylus pressure to 1.5 grams with MMC 20 E and 1.2 grams with MMC 20 EN.
Play cut 1.
Connect oscilloscope to right and left channels.
Push stud B in direction of arrow A until the same distortion is present in both channels (when distortion is present in left channel slacken spring C, for right channel tighten the spring).
Check:
Adjust stylus pressure to 1.7 grams with MMC 20 E and 1.4 grams with MMC 20 EN.
Again play cut 1 with oscilloscope connected to right and left channels; no distortion must occur.

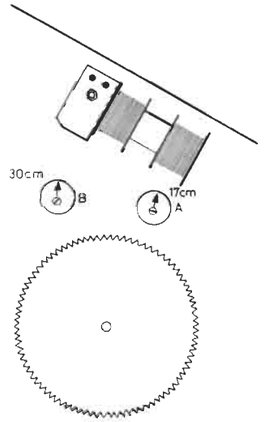
Automatic record-size mechanism



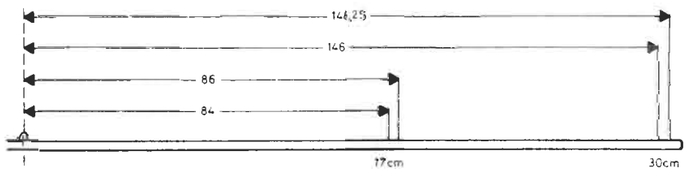
Take off turntable.
Place 60-gram weight on centre adaptor (60-gram and 20-gram weight kit 3624024).
Start turntable.
The centre adaptor should then be capable of lifting the weight, and the pickup arm should travel in to 17-cm lowering.
Adjustment can be made with screw A. Turn screw A anticlockwise for greater lifting power and clockwise for less lifting power.
Place weights of 60 and 20 grams on the centre adaptor.
Start turntable.
The centre adaptor should then be incapable of lifting the weights, and the pick up arm should travel in to 30-cm lowering.
Adjustment should likewise be made with screw A.

Pickup arm lowering

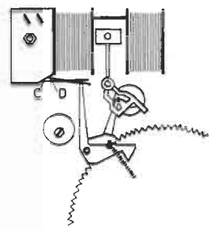




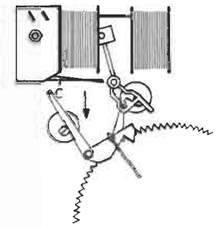
Pickup arm lowering can be adjusted both from above and from below.
The adjustment described here is made from above.
Take off turntable.
Place 60-gram weight on centre adaptor.
Start turntable.
With eccentric A adjust until the pickup arm lowers inside the field marked 17 cm in the accompanying drawing.
Place 60- and 20-gram weights on the centre adaptor.
Start turntable.
With eccentric B adjust until the pickup arm lowers inside the field marked 30 cm in the accompanying drawing.
When making the adjustment from below, a single record (17 cm) and an LP record (30 cm) may be used instead of weights.



Motor switch (15RL1)



When the Motor switch is open (the armature of the mechanical relay in its mid-position) the clearance between the C and D sections of the switch should be 0.5 - 1 mm. This is adjusted by bending the D-section of the switch.



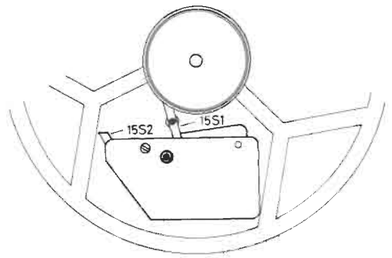
When the Motor switch is closed, the C-section of the switch should press at approx. 15 p in the direction of the arrow.
This is adjusted by bending the C-section of the switch.

DESCRIPTION

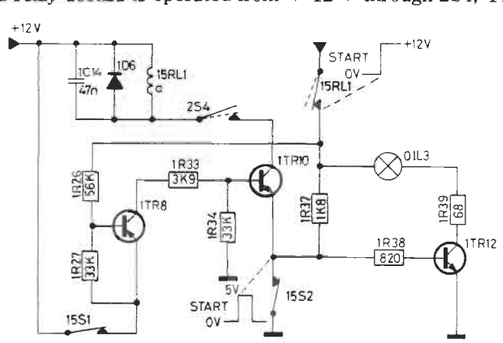
In the Beogram 2200 and Beogram 3400, speed selection and pickup-arm cueing are controlled automatically by means of a sensor which feels the weight of the record. If the record weighs over 80 grams, the pickup arm is brought in to 30 cm and the turntable rotates at 33 r.p.m. If the record weighs less than 60 grams, the pickup arm is brought in to 17 cm and the turntable rotates at 45 r.p.m.

Start with 30-cm record

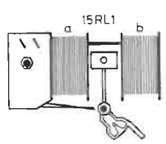
The player can be started only with a record on the turntable.
If the player is in the STOP mode, 15S2 is operated. If a 30-cm record is placed on the turntable, the centre adaptor is pushed home, operating 15S1.



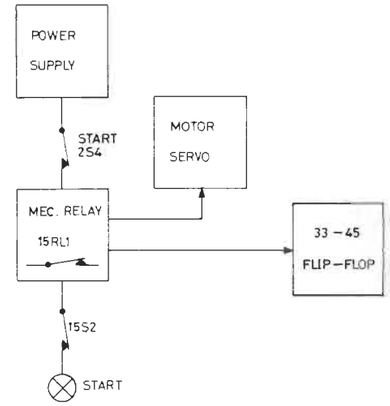
The emitter of 1TR8 receives + 12 V through 15S1, and 1TR8 is forward biased. The base of 1TR10 receives positive voltage, and 1TR10 is forward-biased. When the START button (2S4) is pushed, section a of the mechanical relay 15RL1 is operated from + 12 V through 2S4, 1TR10 and



15S2 to chassis potential. Switch 15RL1 is operated, and voltage is applied to the motor servo circuit and to the speed-selection flip-flop circuit, switching it to the 33-r.p.m. mode.

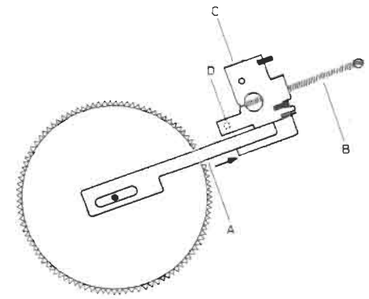


Simultaneously therewith, the cam-lifting wheel goes into mesh, and cueing starts. 15S2 opens, and the base of 1TR12 receives voltage through 15RL1, 1R37 and 1R38. 1TR12 is forward-biased, and lamp 0IL3 lights.



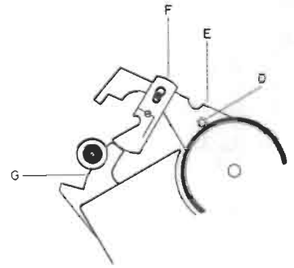
During the cueing operation, the arm A is moved in the direction of the arrow (Sketch 1). The angle C is released from the arm A, and the spring B pulls the angle C, which presses the shaft D.

Sketch 1



With a record on the turntable the centre adaptor rests on the arm E (Sketch 2). The shaft D is secured to the arm E, and the pressure from the angle C will attempt to lift the arm E and hence the centre adaptor and angle F, but since the turntable carries a 30-cm record (> 80 grams), the weight is too large, and arm E will not be lifted. The angle F is not lifted either and accordingly provides a stop to the cueing guide G, so that the pickup arm is lowered at 30 cm. When the pickup arm has been lowered, 15S2 is operated, the base bias for 1TR12 is shorted to chassis potential, 1TR12 goes OFF, and 0IL3 turns off. When the record has finished, the cam-lifting wheel again goes into mesh. 15S2 opens, 1TR12 is forward-biased, and 0IL3 lights; also, the pickup arm rises and travels to its stop position.

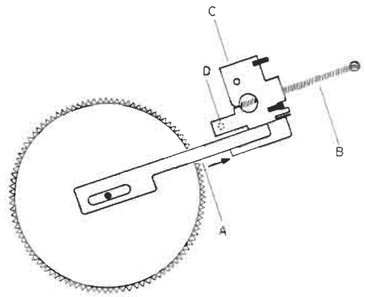
Sketch 2

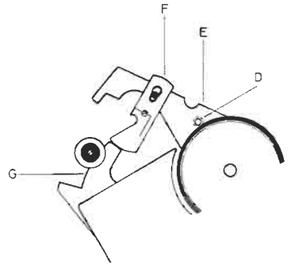


When the pickup arm is in its stop position, the contacts of the mechanical relay open, thereby removing voltage from the motor-servo circuit, speed-selector circuit and control circuit.

Start with 17-cm record

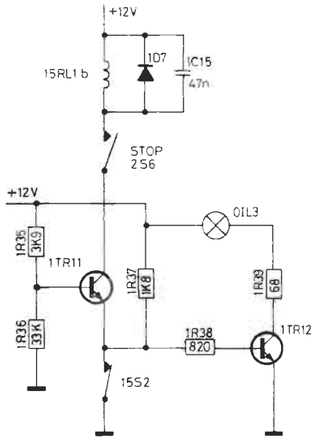
To actuate the cam-lifting wheel with 17-cm records, the same functions occur as with 30-cm records.

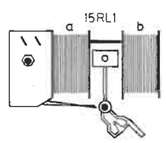




The spring pull at the angle C can now lift the arm E and hence also the centre adaptor and record (< 60 grams). When the center adaptor is lifted, 15S1 opens, and the speed-selecotr circuit switches to 45 r.p.m. While arm E is being lifted, the angle F too is lifted and the cueing control guide G is brought into position for lowering at 17 cm.
The cam-lifting wheel now pulls the arm A opposite to the direction of the arrow, and the record is again lowered on to the turntable.

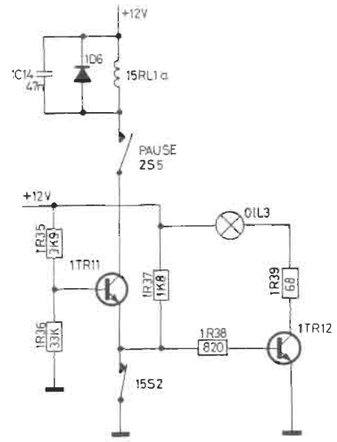
Stop

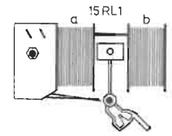




During play, 15S2 is operated and 1TR11 is forward biased. When STOP (2S6) is operated, the b-section of 15RL1 is operated. The cam-lifting wheel goes into mesh as in the case of end-of-record stop; the pickup arm rises and travels out to the stop position.

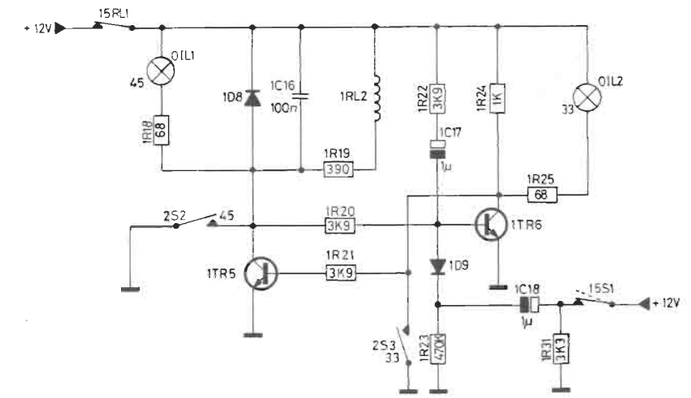
Pause





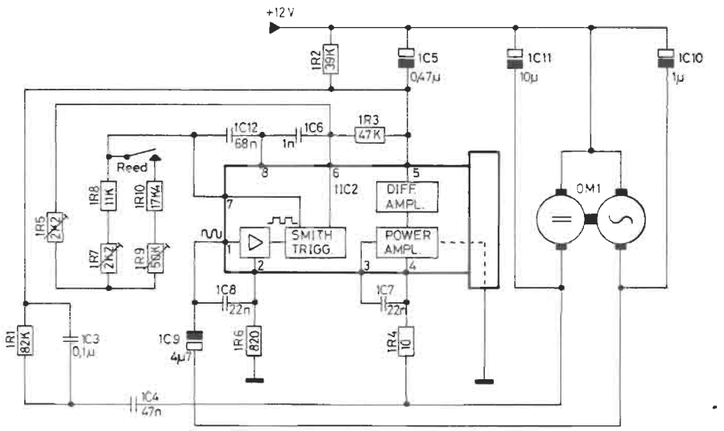
With PAUSE (2S5) depressed, the a-section of 15RL1 is operated. The cam-lifting wheel goes into mesh such that the pickup arm rises but does not travel out. The cam-lifting wheel goes into the stop position, and voltage is removed from the motor servo circuit, speed-change selector circuit and control circuit (15RL1). When START is depressed, voltage is applied to the circuits just referred to; the turntable rotates; and the pickup arm is lowered.

Speed Changing

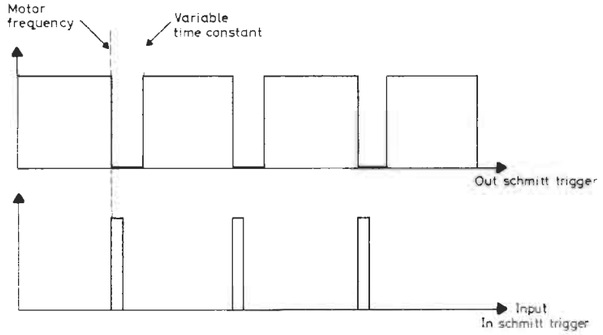


Speed changing is carried out by means of a flip-flop. When the mechanical relay (15RL1) is operated, voltage is applied to the circuit. 1C17 will charge through 1R22. The charging current in 1C17 will forward-bias 1TR6. The collector of 1TR6 goes low and 0IL2 lights; also, the base of 1TR5 is connected to chassis potential through 1R21 and 1TR6. The collector of 1TR5 goes high and keeps 1TR6 forward biased through 1R20. Since 1TR5 does not draw collector current, the reed relay 1RL2 is not operated, and the turntable rotates at 33 r.p.m.
At 33 r.p.m. 15S1 is operated and 1C18 carries a full charge. When the speed changes automatically to 45 r.p.m. 15S1 opens momentarily. When 15S1 opens, 1C18 discharges through 1R31. The cathode of 1D9 becomes negative, and 1TR6 is reverse biased through 1D9. The collector of 1TR6 goes high; this high level is transmitted via 1R21 to the base of 1TR5 as forward bias. The collector of 1TR5 goes low; 0IL1 lights; reed relay 1RL2 is operated; and the speed changes to 45 r.p.m. Manual speed changing is carried out by means of 2S2 and 2S3. 1C16 and 1D8 protect the electronics against induction peaks from the reed relay.

Motor Servo Circuit



The record player's turntable is driven by a tacho-controlled DC motor. A generator in the motor delivers an AC voltage whose frequency is dependent on the motor speed. This AC voltage is fed via 1C9 to pin 1 of 1IC2. The AC voltage is converted into a square-wave, which is fed on to a Schmitt trigger. The square-wave frequency, being dependent on the motor speed, controls one output level of the Schmitt trigger; the other output level is controlled from a variable time constant consisting of 1C12, 1R7, 1R8, 2R5 for 33 r.p.m. and 1C12, 1R7, 1R8, 1R9, 1R10, 2R5 for 45 r.p.m.



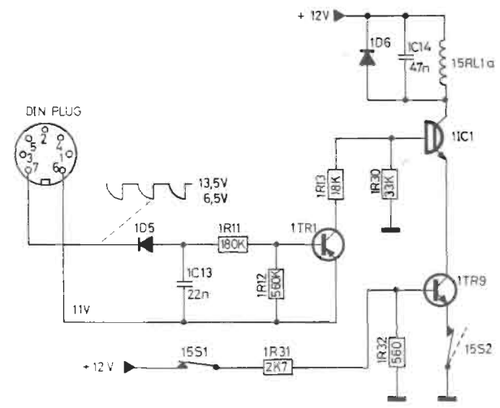
The Schmitt trigger output signal (pin 6) is integrated via 1R3 - 1C5 and fed to pin 5, which is a differential amplifier. The integrated signal at pin 5 will be a DC voltage which varies in proportion to the motor speed. This DC voltage is fed via the differential amplifier to a power amplifier. The power amplifier is placed like a variable resistor whose other end connects to chassis potential. 1R4 limits the motor current and hence the motor speed, thereby preventing the circuit from »taking hold« at a harmonic frequency from the motor's tacho generator.

Remote Control

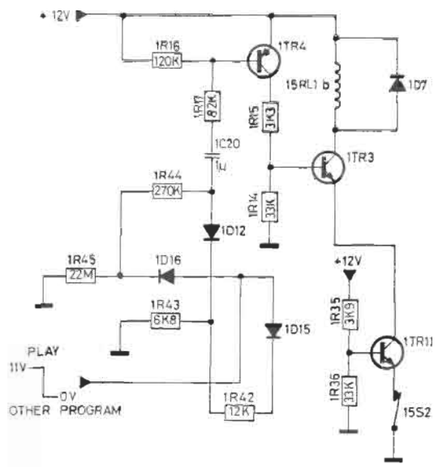
Manual operation of the Beogram 2400, type 5722 (Beogram 3404, type 5727), is carried out as described in the foregoing relating to the Beogram 2200, types 5727 and 5723 (Beogram 3400, type 5726). Over and beyond this, some of the functions of the Beogram 2400 (Beogram 3404) can be activated from the remote control unit which is supplied with the Beomster 2400.
The chart below shows which functions are activated when controls are operated.

First time PHONO is pressed	Player starts, pickup arm travels in and lowers if there is a record on the turntable.
Second time PHONO is pressed	Pickup arm rises (pause begins).
Third time PHONO is pressed	Pickup arm lowers (pause ends).
Change to another program or to stand by while record is playing	Pickup arm rises and returns.
Change to another program during pause (pickup arm raised)	Pickup arm does not return, and lowers if PHONO is operated again.

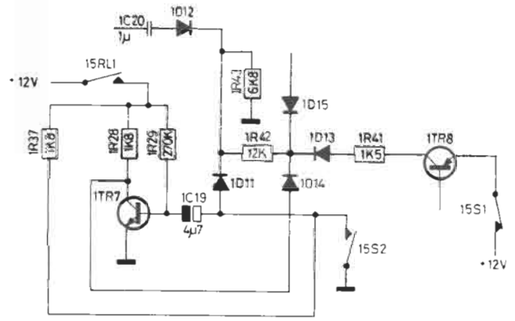
The electrical circuits which handle the remote-control information in the Beogram 2400 (Beogram 3404) in principle consists of three blocks: A start function, a rise/lower function, and a stop function. The circuits receive, through two additional pins in the DIN plug, two bits of information from the Beomaster 2400.



With the player at stop and a record on the turntable, both 15S1 and 15S2 are closed. 1TR9 is forward biased from 12 V through 1R31. When PHONO is operated, 11 V is applied to the emitter of 1TR1 and approx. 6.5 V to the cathode of 1D5. 1TR1 is forward biased, and the base of 1IC1 receives positive bias through 1TR1 and 1R13. 1IC1 is forward biased, the a-section of 15RL1 is activated, and the player starts. When the PHONO button is released, the voltage at the cathode of 1D5 jumps back to 13.5 V whereas the 11 V potential at the emitter of 1TR1 is retained.
During play, 15S2 is closed. If PHONO is again operated, the sequence of functions is as described above except that the cam-lifting wheel engages for pause function, and the pickup arm rises.



During play, the anodes of 1D15 and 1D16 receive 11 V. The 13 V potential is routed through 1D15 and divided across 1R42 and 1R43 such that the cathode of 1D12 is at approx. 4 V. The 13 V potential is likewise routed through 1D16 and 1R44 to the anode of 1D12 and clamped by 1D12 to the 4 V potential at its cathode, and IC20 charges to approx. 7.5 V. When another program – or stand by – is selected, the 11 V potential at the anode of 1D16 disappears, and IC20 discharges through 1D12 and 1R43. This discharge current provides forward bias for 1TR4. The collector of 1TR4 goes positive. This positive voltage is applied to the base of 1TR3 as forward bias; the b-section of 15RL1 is activated; and the cam-lifting wheel engages for stop.



To avoid incorrect functioning such as may be caused by mechanical tolerances it is ensured that 1C20 is always charged (cathode of 1D12 at approx. 4 V) when the player is to go into stop.
With a record on the turntable and the player at stop, the cathode of 1D12 receives voltage through 15S1, 1TR8, 1R41 and 1D13. When PHONO is operated, the pickup arm begins to travel in; 1TR8 cuts off; and the cathode of 1D12 receives voltage through 1D15.
Simultaneously therewith 15S2 opens, and since 1TR7 is forward biased through 1R29, 1C19 will charge through 1R27. If another program is selected while the pickup arm is travelling in, the voltage at 1D15 disappears, and the cathode of 1D12 receives voltage through 1D11. When the pickup arm has travelled all the way in, 15S2 closes, and 1C19 discharges to bias 1TR7 in the reverse direction. The collector of 1TR7 goes high. This high level is applied to the cathode of 1D12 through 1D14 until 1C19 has discharged, whereupon the cathode of 1D12 goes low and 1C20 discharges. The time it takes for 1C19 to discharge secures that the mechanical relay will have time to be placed in a position that enables activation of the relay's stop section before 1C20 discharges.

TECHNICAL DATA

Record player

Speeds	33 – 45 rpm
Speeds control range	>± 3 %
Wow and flutter	<± 0.06 %
Rumble, weighted	>65 dB
Rumble, unweighted	>45 dB
Drive system	Flat belt
Motor	Servo controlled DC
Power supply	220 (110) V
Power consumption	8 W
Dimensions W X H X D	44 X 8.5 X 37 cm
Weight	6.5 kg

Pick-up MMC 20 E

Recommended tracking force	15 mN/1.5 g
Frequency range	20–20,000 Hz ± 2.5 dB
Channel separation 1000 Hz	>20 dB
Channel difference	<2 dB
Stylus	Elliptical diamond
ETM	0.5 mg
Radius of curvature	5 X 17 µm
Compliance	20 µm/mN
Sensitivity	>0.6 mV/47 kohms
Output 5 cm lateral RMS	>2.12 mV/47 kohms

Pick-up MMC 20 EN

Recommended tracking forve	12 mN/1.2 g
Frequency range	20–20.000 Hz ± 2 dB
Channel separation 1000 Hz	>25 dB
Channel difference	<1.5 dB
Stylus	Elliptical naked diamond
ETM	0.4 mg
Radius of curvature	5 X 17 µm
Compliance	25 µm/mN
Sensitivity	>0.6 mV/47 kohms
Output 5 cm lateral RMS	>2.12 mV/47 kohms

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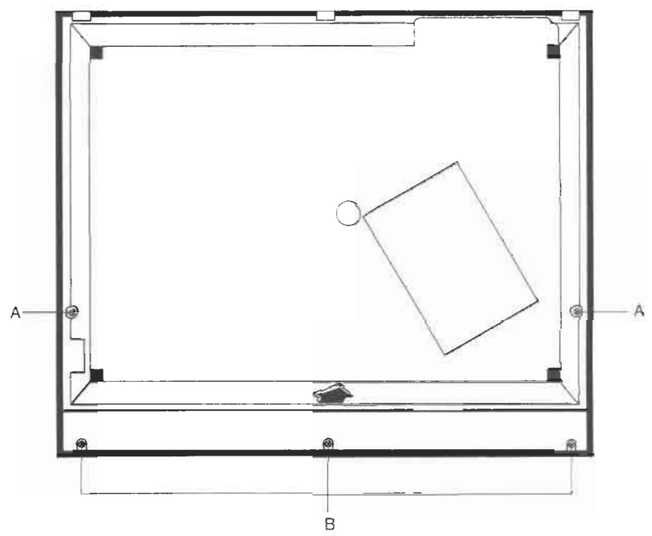
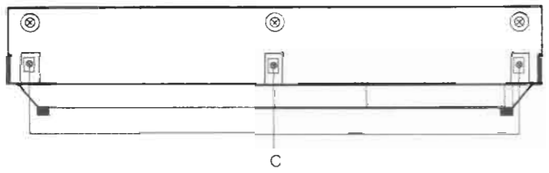
ADSKILLELSE

DISASSEMBLY

ZERLEGUNG





Bang&Olufsen

25 APR 1980

Beogram 1700
Type 5731 og 5733

Beogram 2202
Type 5741

Beogram 2402
Type 5742

Beogram 3404
Type 5747

TO PASTE IN SERVICE MANUAL FOR BEOGRAM 2200, TYPE 5741 ETC.

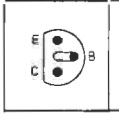
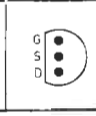
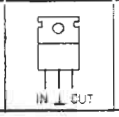
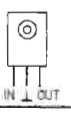
SERVICE MANUAL

Bang&Olufsen

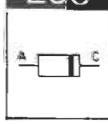
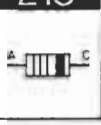
LIST OF ELECTRICAL PARTS

Beogram 1700, Type 5731 and 5733

Transistor and IC's

20	24	105	106	109			
							

0IC1	8340049	**105**	LM 340T-12	1TR4	8320295	**20**	BC 337
		105	µA 7812CU	1TR5			-25/18
		105	µA 7812CU				
		106	MC 7812	1TR6	8320097	**20**	BC 547B
1TR1	832097	**20**	BC 557B	1IC2	8340108	**109**	MHN-3P2-
1TR2							RDS
1TR3	8320396	**24**	2N5639				
		24	MPF 4392				

209	215	217					
							

Diodes

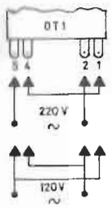
1D1-4	8300023	**209**	1N 4002/RL	1D5-9	8300058	**217**	SFD 184
		209	1N 4003			**215**	1N 4148
						209	1N 4148

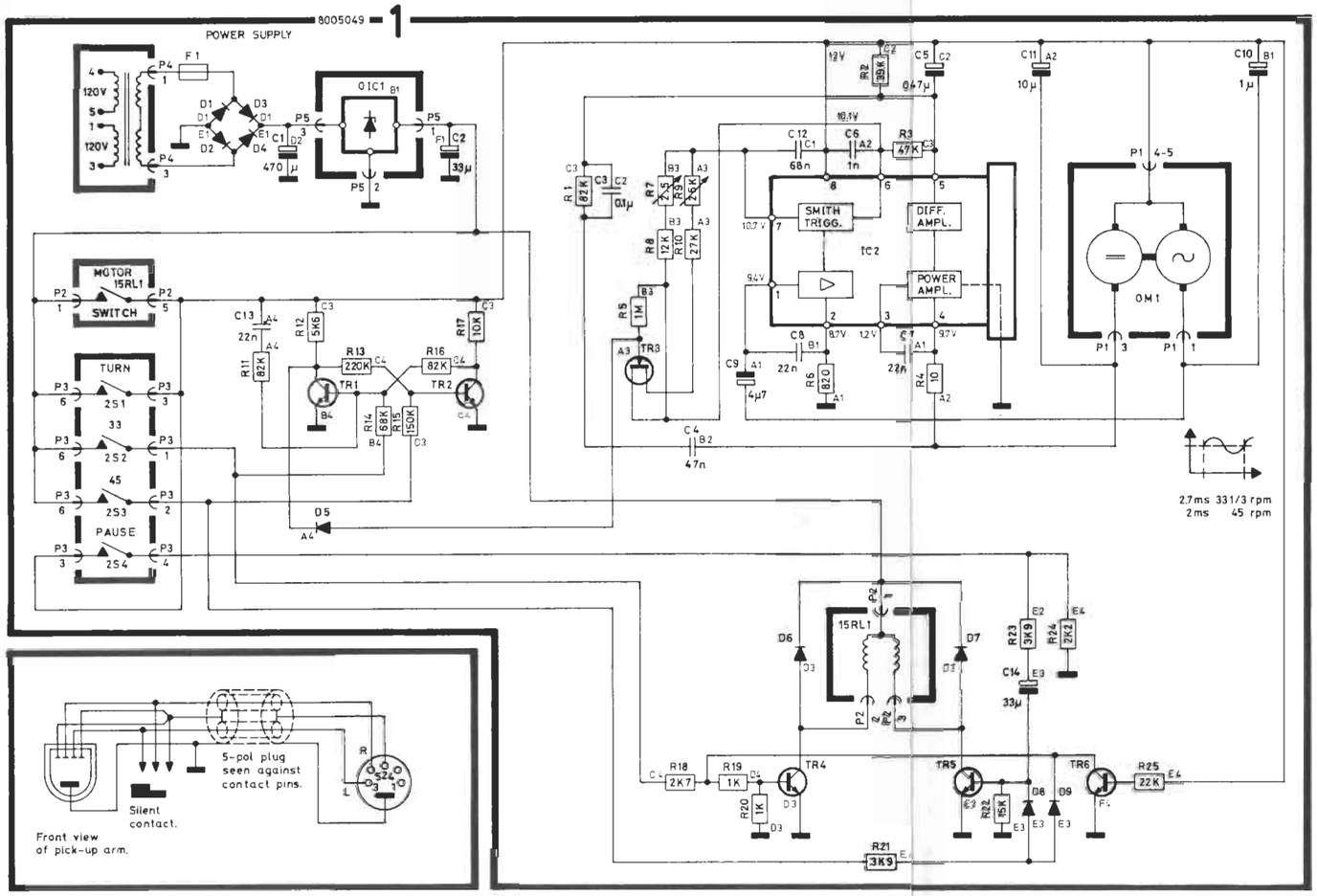
PC1, Power Supply and Control Unit, 8005049

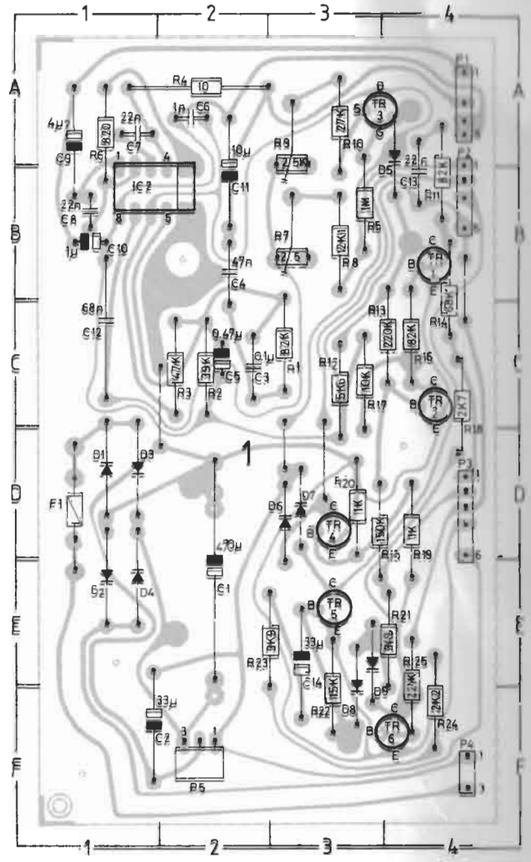
R1	5010091	82 kohms 5% 1/8W	R14	5010062	68 kohms 5% 1/8W
R2	5010060	39 kohms 5% 1/8W	R15	5010063	150 kohms 5% 1/8W
R3	5010045	47 kohms 5% 1/8W	R16	5010091	82 kohms 5% 1/8W
R4	5100023	10 ohms 10% 1W	R17	5010059	10 kohms 5% 1/8W
R5	5010054	1 Mohms 5% 1/8W	R18	5010298	2.7 kohms 5% 1/8W
R6	5011026	820 ohms 5% 1/4W	R19	5010040	1 kohms 5% 1/8W
R7	5370173	2.5 ohms 20%	R20	5100400	1 kohms 5% 1/8W
R8	5020139	12.1 kohms 1% 1/8W	R21	5010069	3.9 kohms 5% 1/8W
R9	5370068	25 kohms 20%	R22	5010053	15 kohms 5% 1/8W
R10	5010141	27 kohms 5% 1/8W	R23	5010069	3.9 kohms 5% 1/8W
R11	5010091	82 kohms 5% 1/8W	R24	5010064	2.2 kohms 5% 1/8W
R12	5010041	5.6 kohms 5% 1/8W	R25	5010079	22 kohms 5% 1/8W
R13	5010120	220 kohms 5% 1/8W			

C1	4201029	470 µF 40V	C8	4010060	22 nF -20+80% 40V
C2	4200414	33 µF 16V	C9	4200322	4.7 µF 63V
C3	4130150	100 nF 20% 100V	C10	4201057	1 µF 35V
C4	4130087	47 nF 10% 250V	C11	4200342	10 µF 63V
C5	4201058	0.47 µF 35V	C12	4100098	68 nF 2.5% 63V
C6	4010027	1 nF 10% 100V	C13	4130079	22 nF 20% 250V
C7	4010060	22 nF -20+80% 40V	C14	4200414	33 µF 16V

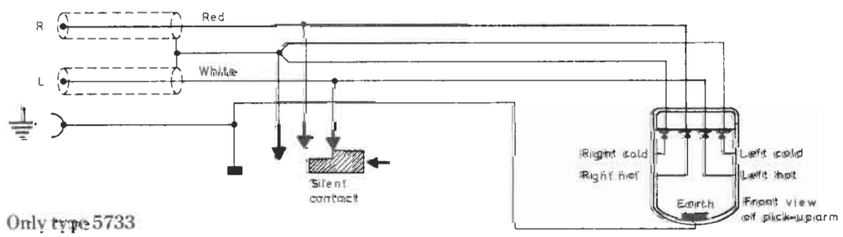
P1	7220132	Plug 5/4 pol.	F1	6600015	400 mA - 250 V slow
P2	7220114	Plug 5/4 pol.		7200038	Holder for fuse
P3	7220145	Plug 6/5 pol.			
P4	7220208	Plug 3/2 pol.			
	7210187	Socket 0IC1			



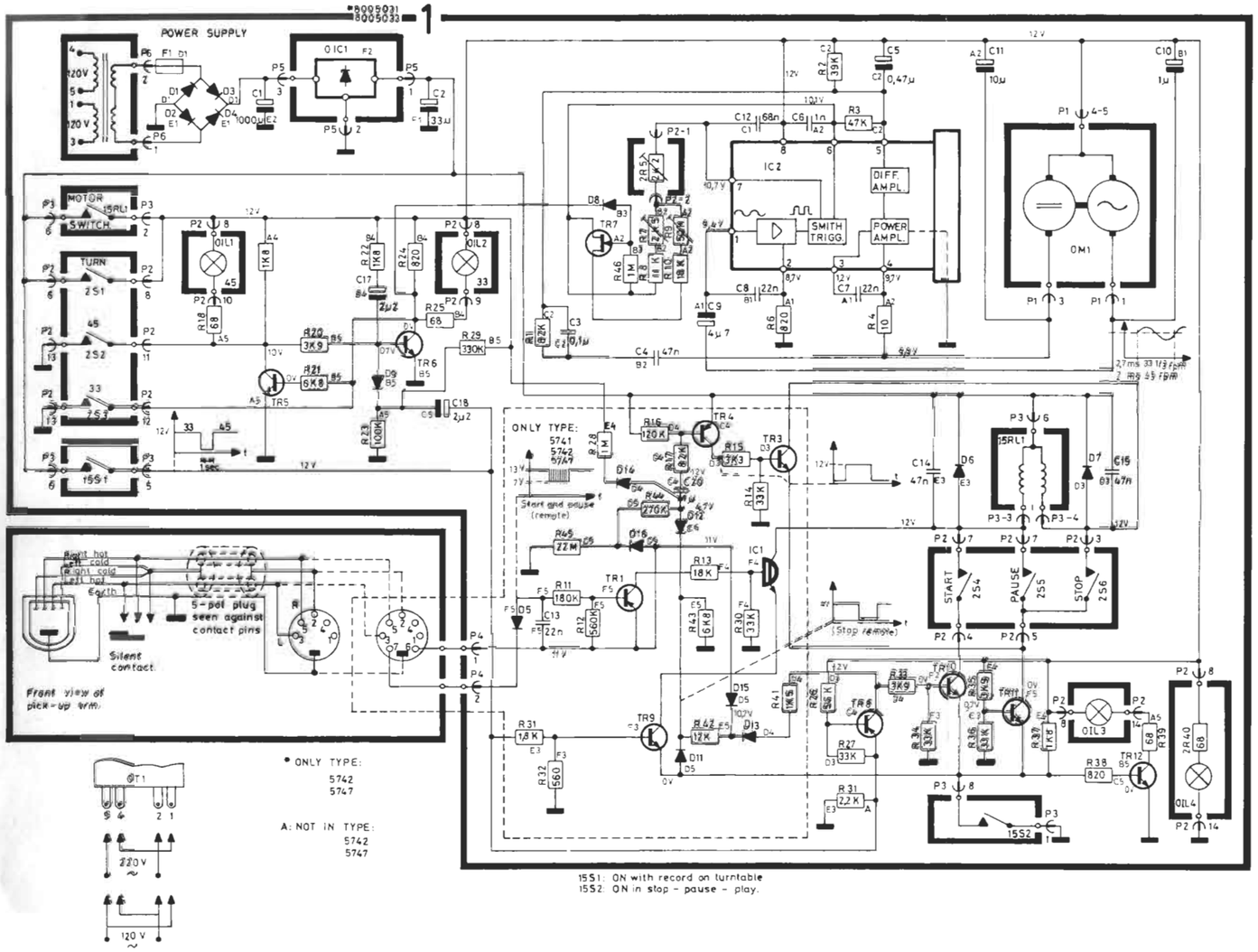


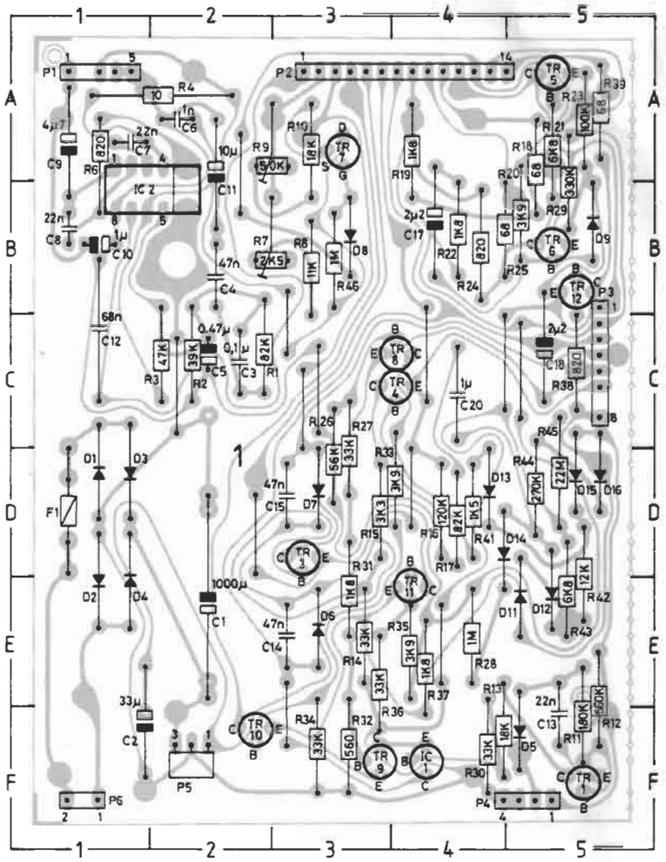


Seen from Copperfoil-side

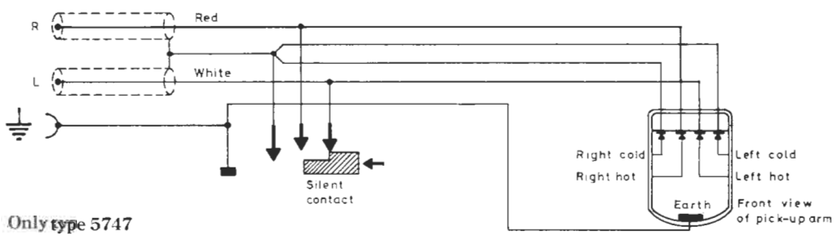


Only type 5733



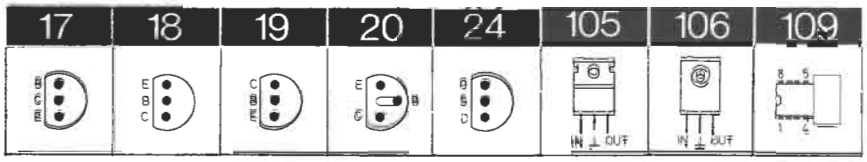


Seen from Copperfoil-side



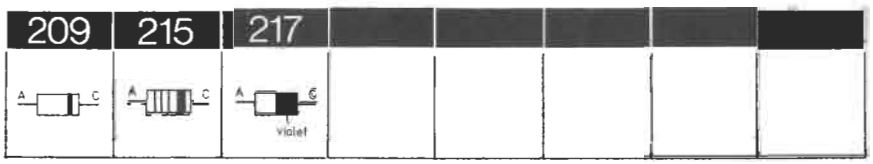
Only type 5747

Transistors and IC's



0IC1	8340049	**105**	LM 340T-12
		105	µA 7812CU
		105	µA 7812CU
		106	MC 7812
1TR1	8320152	**20**	BC 557B
1TR3	8320295	**20**	BC 337-25/18
1TR4	8320152	**20**	BC 557B
1TR5	8320377	**20**	BC 547C
1TR6		**20**	BC 182C/CK
		17	BC 182CL
1TR7	8320396	**24**	2N 5639
		24	MPF 4392
1TR8	8320152	**20**	BC 557B
1TR9	8320295	**20**	BC 337-25/16
1TR10			
1TR11			
1TR12	8320097	**20**	BC 547B
1IC1	8340028	**19**	MPS A13
		19	SPS 5418
		19	TPS A13
1IC2	8340108	**109**	MHN-3P2-RDS

Diodes



1D1-4	8300023	**209**	1N 4002/RL
		209	1N 4003
1D6-16	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148

PC1, Power Supply and Control Unit, 8005033

Beogram 2202, Type 5741

R1	5010091	82 kohms 5% 1/8W
R2	5010060	39 kohms 5% 1/8W
R3	5010045	47 kohms 5% 1/8W
R4	5100023	10 ohms 5% 1W
R6	5010068	820 ohms 5% 1/8W
R7	5370173	2.5 kohms 20% lin.
R8	5020114	11 kohms 1% 1/8W
R9	5370061	50 kohms 20% lin.
R10	5010135	18 kohms 5% 1/8W
R18	5010039	68 ohms 5% 1/8W
R19	5010066	1.8 kohms 5% 1/8W
R20	5010069	3.9 kohms 5% 1/8W
R21	5010052	6.8 kohms 5% 1/8W
R22	5010066	1.8 kohms 5% 1/8W
R23	5010049	100 kohms 5% 1/8W
R24	5010068	820 ohms 5% 1/8W
R25	5010039	68 ohms 5% 1/8W
R26	5010061	56 kohms 5% 1/8W
R27	5010075	33 kohms 5% 1/8W
R29	5010117	330 kohms 5% 1/8W
R31	5010064	2.2 kohms 5% 1/8W
R33	5010069	3.9 kohms 5% 1/8W
R34	5010075	33 kohms 5% 1/8W
R35	5010069	3.9 kohms 5% 1/8W
R36	5010075	33 kohms 5% 1/8W
R37	5010066	1.8 kohms 5% 1/8W
R38	5011026	820 kohms 5% 1/4W
R39	5010039	68 ohms 5% 1/8W
R46	5010054	1 Mohms 5% 1/8W

C1	4200388	1000 µF 35V
C2	4200414	33 µF 16V
C3	4130150	100 nF 20% 100V
C4	4130087	47 nF 10% 250V
C5	4201058	0.47 µF 35V
C6	4010027	1 nF 10% 100V
C7	4010060	22 nF -0+80% 40V
C8	4010060	22 nF -20+80% 40V
C9	4200322	4.7 µF 63V
C10	4201057	1 µF 35V
C11	4200342	10 µF 63V
C12	4100098	68 nF 2.5% 63V
C14	4130087	47 nF 10% 250V
C15	4130087	47 nF 10% 250V
C17	4201035	2.2 µF 63V
C18	4201035	2.2 µF 63V

P1	7220160	Plug 5/4 pol.
P2	7220100	Plug 14 pol.
P3	7220130	Plug 8/7 pol.
P5	7210187	Socket 3 pol.
P6	7220134	Plug 2 pol.
F1	6600024	500mA -250V slow
	7260038	Holder for fuse

PC1, Power Supply and Control Unit, 8005031

Beogram 2402 and 3404, Type 5742 and 5747

R1	5010091	83 kohms 5% 1/8W
R2	5010060	39 kohms 5% 1/8W
R3	5010045	47 kohms 5% 1/8W
R4	5100023	10 ohms 10% 1W
R6	5010068	820 ohms 5% 1/8W
R7	5370173	2.5 kohms 20% lin.
R8	5020114	11 kohms 1% 1/8W
R9	5370061	50 kohms 20% lin.
R10	5010135	18 kohms 5% 1/8W
R11	5010072	180 kohms 5% 1/8W
R12	5010071	560 kohms 5% 1/8W
R13	5010135	18 kohms 5% 1/8W
R14	5010075	33 kohms 5% 1/8W
R15	5010076	3.3 kohms 5% 1/8W
R16	5010047	120 kohms 5% 1/8W
R17	5010091	82 kohms 5% 1/8W
R18	5010039	68 ohms 5% 1/8W
R19	5010066	1.8 kohms 5% 1/8W
R20	5010069	3.9 kohms 5% 1/8W
R21	5010052	6.8 kohms 5% 1/8W
R22	5010066	1.8 kohms 5% 1/8W
R23	5010049	100 kohms 5% 1/8W
R24	5011026	820 ohms 5% 1/4W
R25	5010039	68 ohms 5% 1/8W
R26	5010061	56 kohms 5% 1/8W
R27	5010075	33 kohms 5% 1/8W
R28	5010054	1 Mohms 5% 1/8W
R29	5010617	330 kohms 5% 1/8W
R30	5010075	33 kohms 5% 1/8W
R31	5010066	1.8 kohms 5% 1/8W
R32	5010067	560 ohms 5% 1/8W
R33	5010069	3.9 kohms 5% 1/8W
R34	5010075	33 kohms 5% 1/8W
R35	5010069	3.9 kohms 5% 1/8W
R36	5010075	33 kohms 5% 1/8W
R37	5010066	1.8 kohms 5% 1/8W
R38	5010068	820 ohms 5% 1/8W
R39	5010039	68 ohms 5% 1/8W
R41	5010247	1.5 kohms 5% 1/8W
R42	5010046	12 kohms 5% 1/8W
R43	5010052	6.8 kohms 5% 1/8W
R44	5010083	270 kohms 5% 1/8W
R45	5001085	22 Mohms 10% 1/2W
R46	5010054	1 Mohms 5% 1/8W

C1	4200388	1000 µF 35V
C2	4200414	33 µF 16V
C3	4130150	100 nF 20% 100V
C4	4130087	47 nF 10% 250V
C5	4201058	0.47 µF 35V
C6	4010027	1 nF 10% 100V
C7	4010060	22 nF -20+80% 40V
C8	4010060	22 nF -20+80% 40V
C9	4200322	4.7 nF 63V
C10	4201057	1 µF 35
C11	4200342	10 µF 63V
C12	4100098	68 nF 2.5% 63V
C13	4130089	22 nF 10% 250V
C14	4130087	47 nF 10% 250V
C15	4130087	47 nF 10% 250V
C17	4201035	2.2 µF 63V
C18	4201035	2.2 µF 63V
C20	4130155	1 µf 10% 100V

P1	7220160	Plug 5/4 pol.
P2	7220100	Plug 14 pol.
P3	7220130	Plug 8/7 pol.
P4	7220133	Plug 4 pol.
P5	7210187	Socket 3 pol.
P6	7220134	Plug 2 pol.
F1	6600024	500 ma - 250V slow
	7200038	Holder for fuse

Other parts as for Beogram 2200, type 5721 etc.

LIST OF MECHANICAL PARTS

Beogram 2202, Type 5741

003	2726127	Turntable	0043	2568582	Profile
0023	2514028	Hook	0054	2072101	Lifting screw
0024	2815007	Leaf spring	0055	2854076	Lifting arm
0033	3342040	Counterweight	0056	2622190	Washer
01Modul	8005033	PC, control	17Modul	2850101	Pickup arm

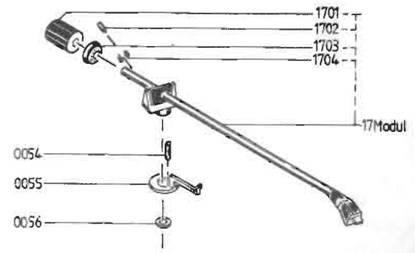
Beogram 2402, Type 5742

003	2726127	Turntable	0042	8954660	Pickup MMC 20EN (replacement)
0016	6270211	Lead w/plug and socket			
0018	2515003	Nylon clamp	0043	2568583	Profile
0023	2514028	Hook	0054	2072101	Lifting screw
0024	2815007	Leaf spring	0055	2854076	Lifting arm
0033	3342040	Counterweight	0056	2622190	Washer
01Modul	8005031	PC, control	17Modul	2850101	Pick-up arm

Beogram 3404, Type 5747

003	2726127	Turntable	0042	8954660	Pickup MMC 20EN (replacement)
0016	6270211	Lead complete			
0018	2515003	Nylon clamp	0043	2568508	Profile
0023	2514028	Hook	0054	2072101	Lifting screw
0024	2815007	Leaf spring	0055	2854076	Lifting arm
0033	3342040	Counterweight	0056	2622190	Washer
0T1	8013209	Mains transformer		3131131	Screen for mains transformer
				6100012	Mains lead 2.5 m
01Modul	8005031	PC, control	17Modul	2850101	Pickup arm
				6273838	Connector

Pickup Arm 17, 2850101



1701	3342076	Counterweight	1703	3342044	Dial for tracking force
1702	2070034	Threaded pin M3x5	1704	2576114	Adjustment bushing

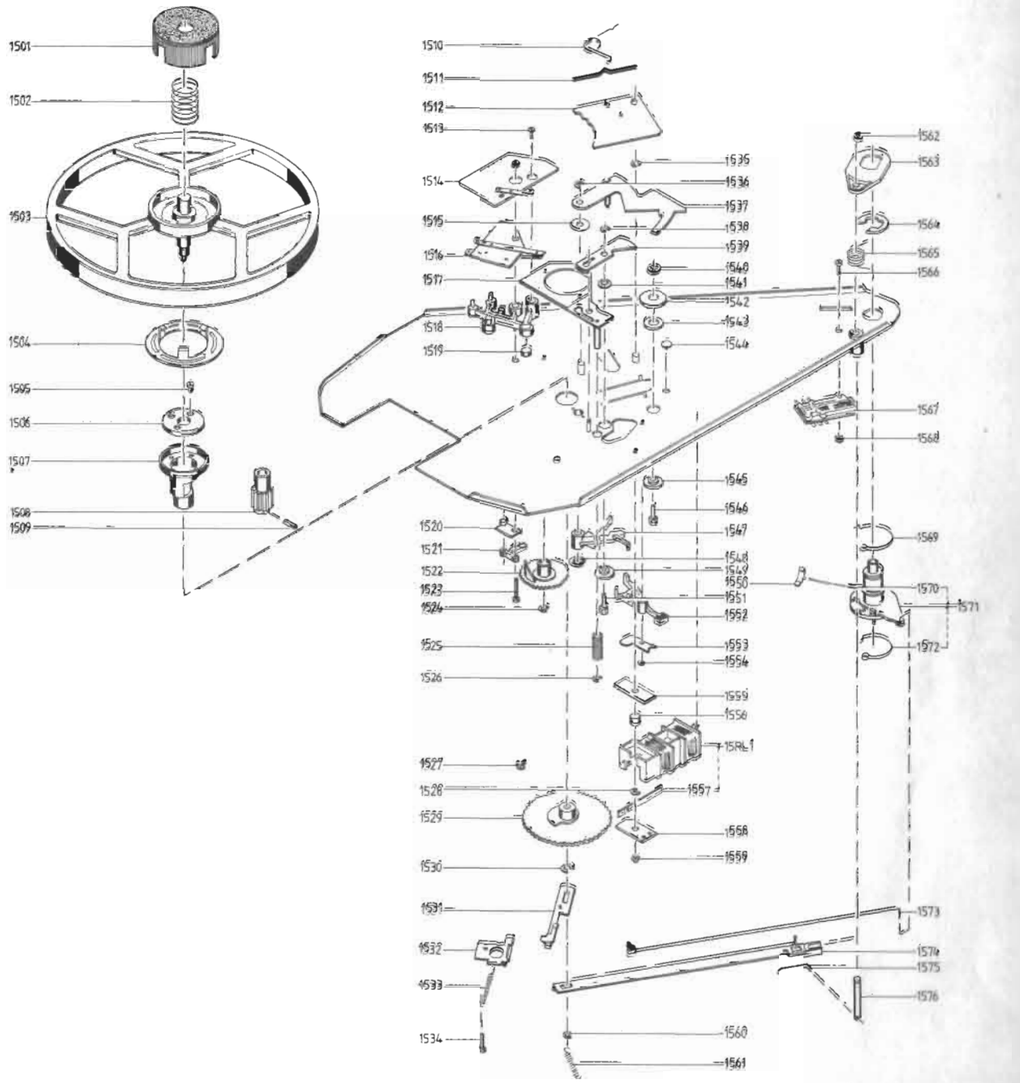
See also drawing page 3-2 and 9-3

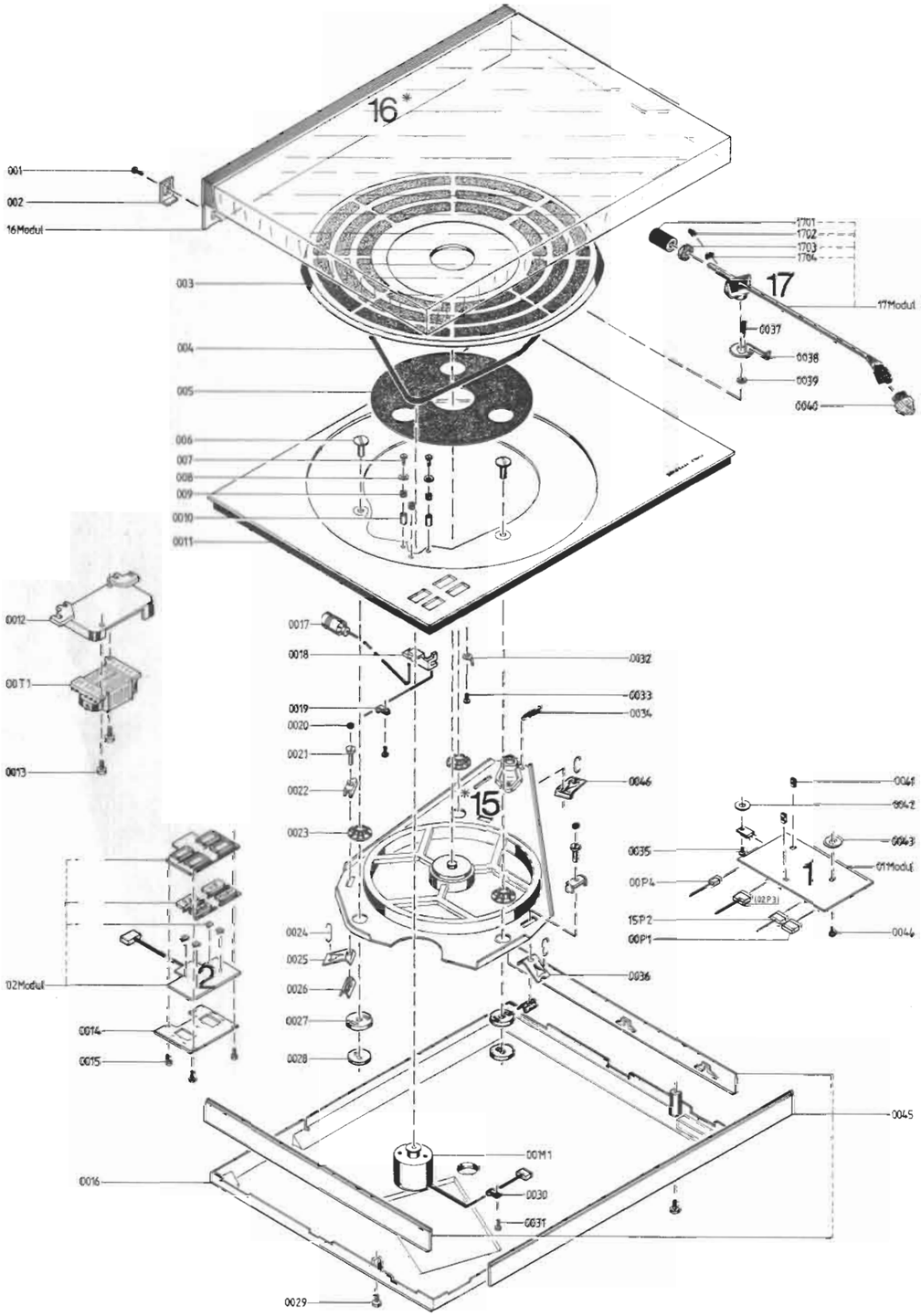
Other parts as for Beogram 2200, Type 5721

Deck 15 for Beogram 2202, 2402 and 3404 Type 5741, 5742 and 5747

1501	3014039	Adaptor
1502	2818059	Spring
1503	2794075	Flywheel
1504	3014040	Adaptor ring
1505	2038220	Screw AM3x12
1506	2905075	Bearing ring
1507	3150037	Bearing housing complete
1508	2700024	Gear wheel
1509	2361048	Locking pin
1510	2819145	Spring
1511	2819155	Spring
1512	3014041	Friction plate
1513	2038005	Screw AM3x5
1514	3162126	Cover
1515	2622285	Washer
1516	7459017	Switch
1517	3014042	Adaptor plate
1518	3152270	Holder
1519	3356034	Magnet
1520	2576118	Spacer
1521	7402081	Micro-switch
1522	2700026	Gear wheel
1523	2038229	Screw M3x18
1524	2390002	E-ring 3.2
1525	2818060	Spring
1526	2390002	E-ring 3.2
1527	3152118	Lead holder
1528	2390002	E-ring 3.2
1529	3017013	Camwheel
1530	2390002	E-ring 3.2
1531	2542511	Bracket
1532	2542512	Bracket
1533	2818061	Spring
1534	2038078	Screw
1535	2390002	E-ring 3.2
1536	2390002	E-ring 3.2
1537	3014031	Arm
1538	2390001	E-ring 2.3
1539	3014043	Stop
1540	2395030	Lock disc
1541	2395030	Lock disc
1542	2938084	Washer
1543	2622198	Washer
1544	3035020	Plastic foot
1545	2803005	Washer
1546	2992048	Tap
1547	2853058	Arm
1548	2390015	E-ring 5.5
1549	2803005	Washer
1550	2816162	Slider
1551	2992076	Tap
1552	2853059	Arm
1553	3164387	Cover
1554	2380011	Nut M3
1555	3170185	Insulation
1557	7530084	Contact
1558	3162127	Cover
1559	2380011	Nut M3
1560	2390002	E-ring 3.2
1561	2810082	Spring
1562	2390002	E-ring 3.2
1563	2623034	Lifting plate
1564	2938141	Lock
1565	2812082	Spring
1566	2038218	Screw M3x12
1567	7459018	Silent contact
1568	2380011	Nut M3
1569	2819106	Spring
1570	2810095	Spring
1571	2938153	Bearing complete
1572	2819107	Spring
1573	2850097	Arm
1574	2852040	Arm
1575	2530326	Arm
1576	2850093	Bar

15RL1	8024062	Coil complete
	7500135	Contact





Beogram 1700, Type 5731

001	2039010	Screw AM3x6 black	0026	2640032	Clamp
002	2530312	Clamp	0027	2938100	Bushing
003	2726126	Turntable	0028	2622228	Washer
004	2732037	Drive belt	0029	2043065	Screw AM4x6 black
006	2046910	Screw	0030	2510067	Lead holder
007	2036213	Screw AM2,6x8	0031	2039903	Screw AM3x5
008	2622271	Washer	0032	7530005	Solder tag
009	2938137	Rubber bushing	0033	2039903	Screw AM3x5
0010	2930074	Brass bushing	0034	2810090	Spring
0011	3458224	Top plate	0035	2039903	Screw AM3x5
0012	3172075	Insulation	0036	2815012	Leaf spring
0013	2043065	Screw AM4x6 black	0037	2072101	Lifting screw
0014	3152272	Holder	0038	2854076	Lifting arm
0015	2039027	Screw AM3x6 black	0039	2622190	Washer
0016	3454172	Bottom	0040	8954640	Pickup MMC 20S (replacement)
0017	6270182	Lead w/plug			
0018	2515024	Lead holder	0041	3152063	Holder
0019	2510067	Lead holder	0042	2622231	Mica sheet
0020	3180767	Washer	0043	2622231	Mica sheet
0021	2042209	Screw AM4x10	0044	2013201	Screw 2,9x6,5
0022	2640031	Clamp	0045	3412261	Cabinet, teak
0023	2938129	Bushing		3412264	Cabinet, rosewood
0024	2514028	Hook		3412264	Cabinet, oak
0025	2815012	Leaf spring		3412265	Cabinet, white

00M1	8400098	Motor w/pulley and socket	00T1	8013197	Mains transformer
00P1	7210115	Socket/housing 5/4 contact	00P4	6273816	Leads w/socket
	7600114	Contact pin	15P2	6273872	Leads w/socket
01Modul	8005049	PC, control	16Modul	3164241	Dust cover, complete
02Modul	2775749	Set of buttons, complete			
17Modul	2850101	Pickup arm	1703	3342044	Dial for tracking force
1701	3342076	Counterweight	1704	2576114	Adjustment bushing
1702	2070034	Threaded pin M3x5			

Beogram 1700, Type 5733

005	2622264	Washer	00T1	8013209	Mains transformer
0017	6270166	Lead w/plug		3131131	Cap for mains transformer
	6276194	Chassis connection		6100012	Mains lead 2.5 m
0040	8954656	Pickup MMC 20E (replacement)			

Other parts as for Beogram 1700, Type 5731

Deck 15 for Beogram 1700, Type 5731 and 5733

1501	3014036	Adaptor
1502	2818059	Spring
1503	2794072	Flywheel
1504	2038220	Screw AM3x12
1505	2905075	Bearing ring
1506	3150037	Bearing housing complete
1507	2700024	Gear wheel
1508	2361048	Locking pin
1509	2819145	Spring
1510	2819155	Spring
1511	3014041	Friction plate
1512	2390002	E-ring 3.2
1513	2390002	E-ring 3.2
1514	3014031	Arm
1515	2622285	Washer
1516	2395030	Lock disc
1517	2938084	Washer
1518	3014033	Stop
1519	2622198	Washer
1520	2390015	Locking ring 5.5
1521	2803005	Washer
1522	2992048	Tap
1524	2390002	E-ring 3.2
1525	3017013	Camwheel
1526	2390002	E-ring 3.2
1527	2390002	E-ring 3.2
1528	2810082	Spring
1529	2395030	Lock disc
1530	2938084	Washer
1531	2622198	Washer
1532	3035020	Plastic foot
1533	2803005	Washer
1534	2992048	Tap
1535	2853058	Arm
1536	2816162	Slider
1537	2853059	Arm
1538	3164387	Cover
1539	2380011	Nut M3
1540	3170185	Insulation
1541	7530084	Contact
1542	3162127	Cover
1543	2380011	Nut M3
1544	2390002	E-ring 3.2
1545	2623034	Lifting plate
1546	2938141	Lock
1547	2812082	Spring
1548	2038218	Screw M3x12
1549	7459018	Silent contact
1550	2380011	Nut M3
1551	2819106	Spring
1552	2810095	Spring
1553	2810107	Spring
1554	2938153	Bearing complete
1555	2850097	Arm
1556	2852040	Arm
1557	2530326	Arm
1558	2850093	Bar

15RL1	8024061	Coil complete
	7500135	Contact